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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,989	12/09/2003	Jin-Woo Park	61610112US	2761
58027 7590 02/06/2007 H.C. PARK & ASSOCIATES, PLC 8500 LEESBURG PIKE SUITE 7500 VIENNA, VA 22182			EXAMINER ROY, SIKHA	
			ART UNIT	PAPER NUMBER
			2879	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/06/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/729,989

Applicant(s)

PARK ET AL.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) 1 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 3, 2007 has been entered.

Claims 26-33 have been withdrawn and claims 1-25 are pending in the instant application.

### ***Claim Objections***

Claims 1 and 14 are objected to because of the following :

Regarding claims 1 and 14, the limitation reciting 'a porous material layer comprising transparent material adapted to transmit light emitted by the organic EL portion to the front substrate and to absorb moisture and **to remain transparent even after absorption of moisture**' has not been described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is not clear whether porous silica material possesses this property of **staying transparent before and after absorption of moisture** inherently or not. For continuing examination the Examiner considers the porous silica material having plurality of absorption holes inherently possesses this property. Proper clarification is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 -25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,803,127 to Su et al., U.S. Patent 6,791,256 to Nishizawa et al., U.S. Patent 5,321,102 to Loy et al. and further in view of U.S. Patent 6,762,553 to Yokogawa et al.

Regarding claim 1 Su discloses (Fig.3 column 3 lines 35-67) an organic EL display device comprising a rear substrate 42, an organic EL portion 48 formed on the surface of the rear substrate 42 and having a first electrode 45, an organic layer 47 and a second electrode 49 sequentially laminated, a front substrate 46 coupled to the rear substrate 42 at an internal surface of the front substrate to seal an internal space 52 in which the organic EL portion is accommodated thereby isolating the organic EL portion 48 from outside and a moisture-absorbing layer 50I coated on the internal surface of the front substrate 46.

Su does not disclose explicitly the sealant disposed between the rear substrate and the moisture-absorbing layer.

Nishizawa in the same field of endeavor discloses (Fig. 9 column 13 lines 1-41) a flat display device including a sheet-like rubber GS containing dehumidifying agent or free oxygen absorber and the sealant SL is coated between the moisture absorbing layer GS and the substrate SUB1, coupling the two substrates SUB1 and SUB 2. Nishizawa discloses this configuration provides a display device which blocks penetration of moisture or gases via the facing portions at the peripheries of the substrates and hence a good display is obtained for a longer period of time.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the transparent moisture-absorbing layer of Su so that it extends to the end of the rear substrate and the sealant is disposed between the moisture-absorbing layer and the rear substrate as taught by Nishizawa for providing a display device which blocks penetration of moisture or gases via the facing portions at the peripheries of the substrates and hence providing a good display for a longer period of time.

Claim 1 differs from Su and Nishizawa in that Su and Nishizawa do not exemplify the moisture absorbing layer comprising a porous material layer comprising a transparent material adapted to transmit light emitted by the organic EL portion to the front substrate and to absorb moisture and to remain transparent even after absorption of moisture.

Loy in relevant art discloses (column 1 lines 21,22, column 2 line 65 through column 3 line 5) use of porous silica material as desiccating water from closed packages. Loy further teaches this porous silica acts as a high surface area desiccant

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and can be formed into thin films. Yokogawa in pertinent field discloses (column 9 lines 61-67, column 10 lines 1-13) porous silica material (silica aerogel) having high porosity (preferably at least 80%) and light transparency. It is the position of the examiner that the desiccating agent of Loy being same porous silica with absorption holes acting as molecular sieve would have the property of being transparent and staying transparent as taught by Yokogawa.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the moisture-absorbing layer of Su and Nishizawa by the porous and transparent silica gel which absorbs moisture and stays transparent as taught by Yokogawa and Loy for providing excellent desiccation in the display with high surface area and hence enhancing the operating life.

Regarding claim 2 Su, Nishizawa and Loy discloses the moisture-absorbing layer having plurality of absorption holes.

Regarding claim 3 Loy discloses (claim 9) the plurality of absorption holes having diameter less than 2 nm.

Regarding claim 4 Su discloses (column 3 line 66,67) the moisture absorption layer having thickness of less than 10  $\mu\text{m}$ .

Regarding claim 5 Loy discloses (claim 9) the plurality of absorption holes having diameter less than 2nm.

Regarding claim 6 Su, Nishizawa and Loy are silent about the first electrode being transparent and second electrode being reflection type.

Yokogawa discloses (Fig. 11 column 1 lines 34-46) an EL layer 13 sandwiched between a first transparent electrode 12 and a back metal electrode 14 made of reflecting aluminum formed on glass plate 11. Yamada discloses this structure is a basic structure and used for EL device where light emission takes place from the bottom glass plate.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to employ the basic structure for the laminated EL portion of Su, Nishizawa and Loy as disclosed by Yokogawa for having a display with light emission taking place from the bottom substrate.

Regarding claim 7 Su, Nishizawa, Loy and Yokagawa do not exemplify the first electrode being reflection type and the second electrode transparent.

It would have been obvious to form electrode stack in a reverse order so that the bottom electrode is reflecting and top electrode is transparent of the EL portion of Su, Nishizawa, Loy and Yokogawa for having a display with light emission from the top substrate.

Regarding claims 8 and 9 Su discloses (Fig. 3 column 3 lines 55-67) another inorganic protection layer 50II made of metal oxides provided on the second electrode.

Regarding claim 11 Su discloses (column 1 lines 54-61) the internal space defined by the front and rear substrate is filled with dried inert gas.

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Regarding claim 12 Su discloses (column 3 lines 45-47) the front substrate 46 is made of glass.

Regarding claim 13 Su discloses (Fig.3) a protection layer 50I for protecting front substrate is formed on internal surface of the front substrate.

Regarding claim 14 Su, Nishizawa , Loy and Yokogawa disclose all the limitations same as of claim 1 and additionally disclose the moisture absorbing layer coated on the internal surface of the front substrate is made of porous silica layer with a plurality of absorption holes.

Claims 15-17 essentially recite the same limitations as of claims 3-5 respectively and hence are rejected for the same reasons (see rejection of claims 3-5).

Claims 20,21 and 23-25 essentially recite the same limitations as of claims 8,9 and 11-13 respectively and hence are rejected for the same reasons (see rejection of claims 8,9,11-13).

Regarding claim 10 Su discloses (column 2 lines 25,26) the space between the rear and front substrate is sealed and formed air tight. It would have been obvious to specify the space defined between the rear and front substrates being vacuous so that there is no generation of impurities in the space reacting with the organic EL portion thus preventing formation of dark spots and resulting in prolonged active life of the display.



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Claims 18 and 19 essentially recite the same limitations as of claims 6,7 respectively and hence are rejected for the same reason.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,800,350 to Van Hal et al., U.S. Patent 6,791,256 to Nishizawa et al., and further in view of U.S. Patent 6,709,806 to Hotta et al.

Regarding claim 1 Van Hal et al. discloses (Fig. 1 column 3 lines 1-15, column 4 lines 15-45) an organic EL display comprising a rear substrate 2 an organic EL portion formed on the surface of a rear substrate and having a first electrode 4, an organic layer (active layer) 3 and a second electrode 5 and a front substrate 7 coupled to the rear substrate 2 at an internal surface of the rear substrate to seal an internal space 8 and a moisture absorbing layer 9 made of silica gel (molecular sieve powder) coated on internal surface of the front substrate and a sealant 6 disposed between the rear substrate 2 and the front substrate 7 so as to couple the two substrates.

Van Hal discloses porous silica gel but does not exemplify the porous material comprising transparent material adapted to transmit light and to absorb moisture and to remain transparent even after absorbing moisture.

Hotta in relevant art discloses (column 11 lines 39-43) silica aerogel having porosity of 90% and a pore diameter not larger than 100nm is excellent in transparency.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to substitute silica gel of Van Hal by silica aerogel having high porosity and

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excellent transparency as taught by Hotta so that light from EL portion can be transmitted through the moisture absorbing layer.

Van Hal and Hotta fail to disclose explicitly the sealant disposed between the rear substrate and the transparent moisture-absorbing layer.

Nishizawa in the same field of endeavor discloses (Fig. 9 column 13 lines 1-41) a flat display device including a sheet-like rubber GS containing dehumidifying agent or free oxygen absorber and the sealant SL is coated between the moisture absorbing layer GS and the substrate SUB1, coupling the two substrates SUB1 and SUB 2. Nishizawa discloses this configuration provides a display device which blocks penetration of moisture or gases via the facing portions at the peripheries of the substrates and hence a good display is obtained for a longer period of time.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the transparent moisture-absorbing layer of Su so that it extends to the end of the rear substrate and the sealant is disposed between the moisture-absorbing layer and the rear substrate as taught by Nishizawa for providing a display device which blocks penetration of moisture or gases via the facing portions at the peripheries of the substrates and hence providing a good display for a longer period of time.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 and 14 have been considered but are moot in view of the new ground(s) of rejection.

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**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Sikha Roy*

Sikha Roy  
Patent Examiner  
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